DOCUMENT RESUME

ED 039 932 PS 003 006

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TITLE	The Effectiveness of a Standard Language Readiness Program as a Function of Teacher Differences.
INSTITUTION	California Univ., Los Angeles.
SPONS AGENCY	Office of Economic Opportunity, Washington, D.C.
PUB DATE	Jun 69
NOTE	17p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$0.95
DESCRIPTORS	Compensatory Education Programs, Language Arts, *Language Programs, *Program Evaluation, Reading Readiness, *Teacher Characteristics
IDENTIFIERS	Head Start

ABSTRACT

In order to foster skills which would facilitate disadvantaged children's ability to learn to read, Buchanan and Sullivan developed the Readiness for Language Arts program published by the Behavioral Research Laboratories (BRL). A pilot study was run (1) to test the effectiveness of the BRL programmed materials on Head Start children and (2) to see if posttest differences between subject and control groups would be due to the program or teacher differences. Seven Head Start classes were randomly designated as experimental groups and 4 as control groups. All subjects were pretested on the Peabody, the UCLA Language Concepts Test, and the Lee-Clark Reading Readiness Test. Also, the experimental classes were given the UCLA Visual Discrimination Inventory. The 7 teachers and 7 teacher aides from the experimental classes were trained in use of the BRL program before they administered it to their students. The program is highly structured and took 4 months to carry out. The children were posttested on the UCLA Language Concepts Test and the Lee-Clark Reading Readiness Test, but no significant between-group difference was found. Teacher behaviors appeared to be related to program effectiveness. (MH)

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F-OEO
Project 4117

ED039932

THE EFFECTIVENESS OF A STANDARD LANGUAGE READINESS PROGRAM AS A FUNCTION OF TEACHER DIFFERENCES[1]

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June 1969

There exists in our society a large group of children who are designated as disadvantaged. The great majority of these children come from the lowest end of the socioeconomic scale. In general, their families are at the bottom of our society in terms of income, tend to come from a rural background, and suffer from social and economic discrimination. According to Deutsch (1967), these children are inferior in auditory and visual discrimination, as well as in judgments concerning time, number, and other basic concepts. Riessman (1962) and Figurel (1964) also note deficiencies in other basic learning skills. However, these deficiencies are not due to inherent genetic inferiority or physical defect, but rather to poor habits of seeing, hearing, and thinking as a result of the deprivation of appropriate early experiences.

Studies showing that cultural deprivation can be alleviated began to appear in the late twenties. Many of these were not carried out with sufficient experimental rigor and their findings were generally disregarded. Now the prevalence of intervention programs provides many research opportunities for testing various instructional methods and curricula.

Spicker, Hodges, and McCandless (1966) worked with psychosocially deprived five-year-olds having Stanford-Binet scores between 50 and 85, but no organic pathology, gross sensory impairment, or serious emotional problems. Four groups were compared: one given a structured, diagnostically-based curriculum, one given a traditional curriculum, a home group with no

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[1]The research reported herein was carried out with the support of the U.S. Office of Economic Opportunity, Contract No. 4117.

curriculum, and a similar home group in another community. All groups showed reliable gains from pre- to posttesting, with the gains by the experimental group significantly greater than those of the control groups.

Sprigle, Van de Riet, and Van de Riet (1967) compared a structured curriculum, a traditional curriculum, and an "at-home" control group with 72 Southern Negro five-year-olds matched for socioeconomic level, age, sex, readiness skills, and intelligence. Results indicated that the mean I.Q. for the experimental group rose 14 points, that of the traditional group remained unchanged, while that of the at-home control decreased by approximately seven points.

The Early Training Project (Gray, Klaus, Miller, and Forrester, 1966) also studied the effects of a special curriculum, based on inferred needs of disadvantaged children. Again, the experimental groups demonstrated increases in I.Q. while the two control groups remained approximately constant.

The Perry Preschool Project (Weikart, 1967), another experimental comparison of the effects of different educational programs, demonstrated similar positive results. It seems safe to conclude that intellectual functioning can be substantially improved by special preschool curricula, by home intervention, or by a combination of both. Traditional preschool programs appear to produce some improvements, but more structured curricula produce the greatest gains. The traditional middle-class nursery is evidently inadequate to meet the special problems of disadvantaged children.

Almost all compensatory preschool programs emphasize a wide range of preacademic skills. However, one of the best predictors of success in beginning reading is the child's ability to identify letters of the alphabet. Children from middle-class homes usually have been exposed to letter-naming either

through alphabet blocks, alphabet books, or parent-directed reading instruction. This is not true with children from a disadvantaged environment, where language deficit is the most fundamental characteristic. For such children, skills which would facilitate learning to read need to be fostered. Most teachers in pre-school settings do not have training in teaching these skills. Thus, a set of programmed materials could provide the necessary guidelines for a pre-reading curriculum.

To determine whether such materials would be appropriate for Head Start classes, a pilot study was carried out by the UCLA Head Start Evaluation and Research Center using the Readiness for Language Arts program developed by Cynthia Buchanan and Roger Sullivan and published by Behavioral Research Laboratories (1967). Two hypotheses were tested:

(1) Head Start children who receive the BRL program will be significantly superior on a test of reading readiness concepts compared to children from a similar population who do not receive this program.

(2) The differences between children receiving the program and those who do not will occur as a function of the materials themselves and be only minimally related to individual teacher differences.

Method

Subjects

Within one Delegate Agency, 11 different Head Start classes were randomly assigned, seven to the experimental and four to the control treatment. In one center having five classes, three were experimental and two control; in two centers having three classes, two classes in each center were in the experimental and one in the control treatment. A detailed description of the population is provided in Table 1.

Criterion Tests

All the children in both the experimental and control groups were given pretests consisting of the Peabody Picture Vocabulary Test, the UCLA Language Concepts Test[2] and Sections 3 and 4 of the Lee-Clark Reading Readiness Test. The experimental classes were also given the UCLA Visual Discrimination Inventory, a new test designed to assess differences in visual discrimination among young children. This skill has consistently shown high correlation with reading ability, but no controlled study has established whether performance in visual discrimination tasks is an adequate predictor of success in beginning reading instruction. The Metropolitan Reading Readiness Test had been scheduled, but preliminary tryout demonstrated that this instrument was beyond the ability of these children.

Posttesting occurred during the first two weeks of June and included the Language Concepts Test and all four sections of the Lee-Clark Reading Readiness Test.

Procedure

The 14 teachers (seven Head Teachers and seven Teacher Aides) in the experimental program were given two briefing sessions with the BRL materials by a member of the UCLA Evaluation and Research staff. They were then visited on several occasions to observe whether there were any problems in administering the program, and given help where necessary.

All 11 classrooms were observed on two occasions by members of the regular evaluation staff using the UCLA Observation of Substantive Classroom Input (1968).

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[2]This test was developed at UCLA to sample performance on specific content in the BRL program. The publisher does not provide evaluation materials.

In addition, teachers of the experimental classes were rated twice on the UCLA Record of Program Presentation. (Appendix A)

The BRL Readiness for Language Arts Program is highly structured, giving in detail what the teachers are to say with each lesson. Concepts presented include: left-right, up-down, over-under, back-front, shapes, colors, letters of the alphabet, and various vowel-consonant combinations. They are introduced one at a time, reviewed, reiterated, and reinforced. The program consists of six texts increasing in difficulty. Only one book at a time was given to the teachers, with instructions to proceed in accordance with the children's span of attention and ability to absorb the material. A minimum lesson period of 15 minutes per day was suggested. One session each week was designated for make-up lessons for those who had been absent. The instruction was carried out over a four-month period.

During the experimental period, classes were visited on a once-a-week schedule, but with observations occurring on an irregular schedule. Time spent on the program ranged from 11 to 30 minutes per day, and the number of pages covered per session from three to 11.

Results

To compare the verbal ability of the children in the two treatments, the Peabody Picture Vocabulary Test was administered before assignment to treatments was made. In addition, the UCLA-BRL test, specifically designed to measure the skills taught in the BRL program, was given as a pre-post measure. For the children who were available for posttesting, the data from both the PPVT and the BRL, plus chronological age and scores on all dependent measures, are presented in Table 2. The data indicate that the control group was slightly more mature, with a mean mental age

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of about two months above that of the experimental group. While this difference was not statistically significant, it undoubtedly contributed to the lack of any measurable difference on the posttest scores. Moreover, even those children who were not given the structured BRL readiness materials were evidently receiving instruction in the pre-reading skills measured by the criterion tests, and thus no support for the first hypothesis could be found. Within treatments, however, the measured gain of the experimental group was significant at the .01 level for both the BRL and the Lee-Clark ($t=6.57$, df 80; $t=5.17$, df 80, respectively), whereas the control group showed significant gain only on the Lee-Clark test ($t=4.19$, df 28, $p < .01$).

It may be that the children in the experimental group did not demonstrate the expected superiority over the control because of the way the instruction was presented. That is, contrary to the second hypothesis, and in spite of the specificity of the format, there might have been large enough differences among class settings and teachers to mask the potential effectiveness of the programmed materials. Two types of evaluations of teacher effect were carried out. In the first, descriptive and observational data were obtained and, in the second, the mean gains by class were related to teachers in a one-way analysis of covariance.

Quite early in the experiment it became apparent that there was wide physical variation among the sites. Site 1, with three classes, had been a furniture showroom. It had three large connected areas so that no separation from the other classes was possible. Children in the outdoor play yards were visible through large plate-glass windows during the instructional periods.

Site 2 had three rooms which could be separated by sliding doors. An alcove away from the play yard was utilized as an instruction area; children from other classes were not permitted to approach this area while teaching was in progress.

Site 3, an old building with cement block walls and metal ceiling beams, had been an automobile salesroom. Four-foot-high movable partitions had been put in to separate the classrooms and play areas. Approximately 90 people (five classes and supporting personnel) used the building. During instruction, the noise level was extremely high and the activities of the other children were visible. Outdoor play area was limited so the majority of the children were usually inside the building. After three weeks of instruction under very adverse conditions, use of the only room with solid walls was arranged. At the end of the second month, however, the Delegate Agency had to give up this site. The children did not attend school for two weeks while the move was being made, and instruction was erratic both immediately preceding and following the move. When the three experimental classes were relocated in a church school with individual classrooms, the instruction was resumed.

Analysis of the data from the UCLA Record of Program Participation showed that teacher differences were even more striking. The teacher (A) of Class 1 in Site 1 followed the text closely, often reading routinely from the manual. If wrong answers were given, they were corrected 90 per cent of the time. Correct answers were strongly reinforced. Individual participation, as opposed to group answers, was not encouraged; only about one-third of the group participated in choral responding. Disruptive behavior was almost always detected and stopped.

The teacher (B) of Class 2 in Site 1 deviated from the text and elaborated on the concepts. Wrong answers were corrected. Correct answers were reinforced, using the child's name with the reinforcement about one-third of the time. Two-thirds of the class participated individually, though children were not encouraged to relate concepts to their own experience. Control of the class was excellent.

The teacher (C) of Class 1 in Site 2 was apt to read routinely from the manual, but used the text as a basis for elaboration in many instances. Wrong answers were corrected about 80 per cent of the time. Answers were requested less often because of the time spent in elaboration, but they were practically always reinforced. Almost 90 per cent of the class participated in individual responses; the children were encouraged to relate the concepts being taught to their own personal experiences. Class control was excellent.

The original teacher of Class 2 at Site 2 was assigned to a training course at the end of the month. The assistant teacher (D), who had attended the original training sessions and had observed the teaching daily, took over and taught the program for almost three of the four months of the experiment. This teacher adhered closely to the text with few deviations or elaborations. Wrong answers were caught and corrected every time. Correct answers were reinforced about 90 per cent of the time, with children referred to by name approximately one-third of the time. About 90 per cent of the children participated individually. Relating concepts to personal experiences was permitted but not invited. The class was firmly controlled.

The teacher (E) of Class 1 in Site 3 relied on routine reading from the text with almost no elaborations or deviations. Wrong answers were

corrected about one-half of the time. Individual children were usually addressed by name. Attempts to relate concepts to experience were discouraged early in the experiment. Two-thirds of the group participated individually. There were a great many instances of disruptive behavior; about one-fifth of these were stopped and another one-fifth were censored but allowed to continue. The remainder were ignored. Class control was poor.

In Class 2, Site 3, the teacher (F) was apparently uncomfortable in the situation and often lost her place in the manual, turned to the wrong page, or produced confusing answers. She elaborated on the text to a considerable extent. Wrong answers were corrected about 85 per cent of the time, and correct answers were always reinforced. More than 90 per cent of the children in the group participated in the sessions. Attempts to relate concepts to experience were not encouraged and were rarely permitted. Disruptive behavior was high and was stopped about two-thirds of the time, but ignored the other one-third. Class control was poor.

The teacher (G) of Class 3 in Site 3 used the text as a point of departure and wove elaborations into her presentation. There was almost no routine reading from the text. Wrong answers were never observed to go uncorrected and correct answers were strongly reinforced. Almost every child participated individually. Attempts to relate concepts to experience were actively encouraged. Class control was excellent. This teacher was the only one to use her assistant in a team teaching approach, to sit with the children and assist in picking up answers and, particularly, to give supplementary help to Spanish-speaking children. However, she was ill for two weeks and this, coupled with the site move, meant that her children received instruction for only three of the four months.

The attitudes of the teachers toward programmed instruction also varied. Site 2 teachers were extremely enthusiastic and conscientious; the material was reviewed thoroughly to assure complete understanding by every child. At Site 1 the teachers were favorable, but not as enthusiastic in their application. The Site 3 teachers, however, seemed antagonistic to the BRL program and used every opportunity to cancel the scheduled lessons. The reduced number of instruction periods per week, combined with the interruption occasioned by the relocation of the site, resulted in very limited progress in the texts.

A more structured assessment of both experimental and control classes was carried out with the UCLA Observation of Substantive Curricular Input. The most distinctive difference between the treatment groups as a whole was that the control teachers were far less structured, had less frequent whole group activities, were less apt to teach rules of behavior and were more apt to permit children to operate on their own.

Table 3 presents the adjusted scores on the two criterion measures, by teachers. While there was a significant correlation (see Table 4) between the BRL and the Lee-Clark, there was no consistent relationship between the two mean scores for any one teacher, with the class achieving the highest mean score on the BRL ranking among the lowest on the Lee-Clark. However, it should be noted that there is a very limited range of performance on the BRL, whereas there is a significant difference among classes on the Lee-Clark (see Table 5).

Discussion

No measurable differences in posttest performance between the control and experimental groups were found in this pilot experiment. While there were chance differences favoring the control group, these were not

sufficient to account for the meager posttest differences.

It had been hypothesized that differences in program effectiveness might be attributed to differences in teachers, and this was partially substantiated. However, there is no clear picture of what type of teacher behaviors are related to program success. While the major distinction seems to be that the control teachers permit a greater degree of individual child activity and control, the teacher whose class scored highest on the BRL test was one who exercised the tightest control and was most rigid in presenting the material from the instructional manual. This teacher's class was among the lowest scorers on the Lee-Clark test. The teacher who during the structured observation showed the greatest emphasis on language and verbal communication had children who scored lowest on the BRL test but had average scores on the Lee-Clark. The teacher who all observers subjectively rated as being the most skillful and perceptive had a class which made the lowest score on the Lee-Clark. This experimental teacher was most like the teachers in the control group, emphasizing social interaction and individual activity with a large measure of child control.

While the data from this study do not offer any definitive guidelines, it does seem clear that the BRL materials are not particularly effective when they are used by teachers without supervision. The characteristics of teachers who will be able to use them effectively in a whole group situation are also not clearly delineated. Further exploration to test whether the BRL program can be more effectively used in small groups and with greater teacher motivation and control seems to be warranted.

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RECORD OF PROGRAM PRESENTATION FOR READING STUDY

Deviations
Number of times deviates from manual

Elaborations (enrichment)
Number of times concepts stressed in addition to words in manual

Child gives wrong answer

Teacher corrects

Teacher accepts

Child gives correct answer

Teacher ignores

Teacher reinforces (no name)

Teacher reinforces (with name)

Gives individual children opportunity to participate	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Number of times children attempt to relate program to own experience

Number of times permitted to relate

Disruptive behavior

Censored

Censored but continued

Uncensored

Number of times assistant teacher participates

Book #_____ Teacher_____ Date_____

Time lesson began_____ Time lesson ended_____ # of minutes_____

Page lesson began_____ Page lesson ended_____ # of pages covered_____

School_____ Examiner_____

Table 1

Description of Total Population

(Before Attrition)

	Experimental N	Control N	Total N
Sex			
Male	52	27	79
Female	41	24	65
Economic Status			
Receiving BPA	47 (49%)	29 (57%)	76 (52%)
Race			
Negro	82	44	126
Caucasian	0	1	1
Mexican-American	11	3	14
Other	0	3	3
C. A. in months			
42-47	2	1	3
48-53	36	12	48
54-59	39	30	69
60-65	15	8	23
66-72	1	0	1
Total Group	93	51	144

Table 2

Means and Standard Deviations on

Pre and Posttest Measures, by Treatments

	Experimental (N=80)		Control (N=28)	
Measure	M	SD	M	SD
BRL Pre-test	12.8	3.7	13.7	2.6
BRL Posttest	16.1	2.6	15.9	2.1
Lee Clark Pre (test 3 & 4)	15.2	6.5	14.4	6.1
Lee Clark Post (test 3 & 4)	19.9	4.8	20.9	5.3
Lee Clark Post (total)	31.7	10.0	32.6	10.1
VDI	20.4	5.0	Not given	
PPVT MA (in months)	42.6	10.4	44.5	15.8
CA (in months)	55.6	4.3	56.5	3.8

Table 3

Adjusted Means on BRL and Lee-Clark Posttests,

for Experimental Treatment, by Teachers.

		BRL		Lee-Clark	
Site	Teacher	Score	Rank	Score	Rank
1	A	16.9	7	32.2	3
1	B	16.2	4	34.5	5.5
2	C	16.6	5	24.9	1
2	D	15.6	2	34.5	5.5
3	E	14.3	1	32.7	4
3	F	16.7	6	30.5	2
3	G	16.0	3	34.7	7

Table 4

Correlations Among Variables

(By Treatments)

	BRL Pretest		BRL Posttest		Lee-Clark Pretest (3 & 4 only)		Lee-Clark Posttest (3 & 4 only)		Lee-Clark Posttest (Total)		VDI
	E[1]	C[2]	E	C	E	C	E	C	E	C	E only
BRL Posttest	.40**	.34									
Lee-Clark Pretest (3 & 4 only)	.46**	.73**	.45**	.55**							
Lee-Clark Posttest (3 & 4 only)	.25*	.56**	.38**	.31	.57**	.42*					
Lee-Clark Posttest (Total)	.41**	.53**	.46**	.46*	.64**	.42*	.77**	.82**			
Visual Discrimination Inventory	.36**	no data	.38**	no data	.58**	no data	.49**	no data	.59**	no data	
Mental Age	.21	.56**	.38**	.29	.43**	.46*	.49**	.54**	.40**	.51**	.43**

[1]Experimental: N = 80

[2]Control: N = 28

*p < .05

**p < .01

Table 5

Analyses of Covariance for

Pre-Post Gains by Teachers

(Experimental Group Only)

(Pretest on BRL and Lee-Clark as Co-Variates)

Measure	Source of Variance	df	MS	F
Lee-Clark (Total) Post	Teachers	6	150.12	3.88**
	Error	71	38.65	
BRL Post	Teachers	6	9.51	2.03
	Error	71	4.69	

**p < .01